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ABSTRACT

A finite impulse response (FIR) filter is disclosed. The finite impulse response (FIR) filter comprises a passive delay line and a plurality of delay stages coupled to the passive delay line. The plurality of delay stages comprises a multiplier stage. The finite impulse response (FIR) filter includes an amplifier coupled to the delay line. A finite impulse response (FIR) filter in accordance with the present invention compensates the low-pass and/or dispersive characteristics of a communication channel (cable, fiber, etc.) in a multi-Gaps link. The receiver uses the filter to cancel the inter-symbol interference (ISI) caused by the channel on the received data. In a second aspect, a decision feedback equalizer (DFE) is a non-linear filter that can cancel the non-linear dispersion effects of a channel, and therefore extends its application to a very wide range of communication channels, including but not limited to channels with linear multi-path and/or nonlinear distortion.